

Dgkz Cas9-CKO Strategy

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Overview

Target Gene Name

- Dgkz

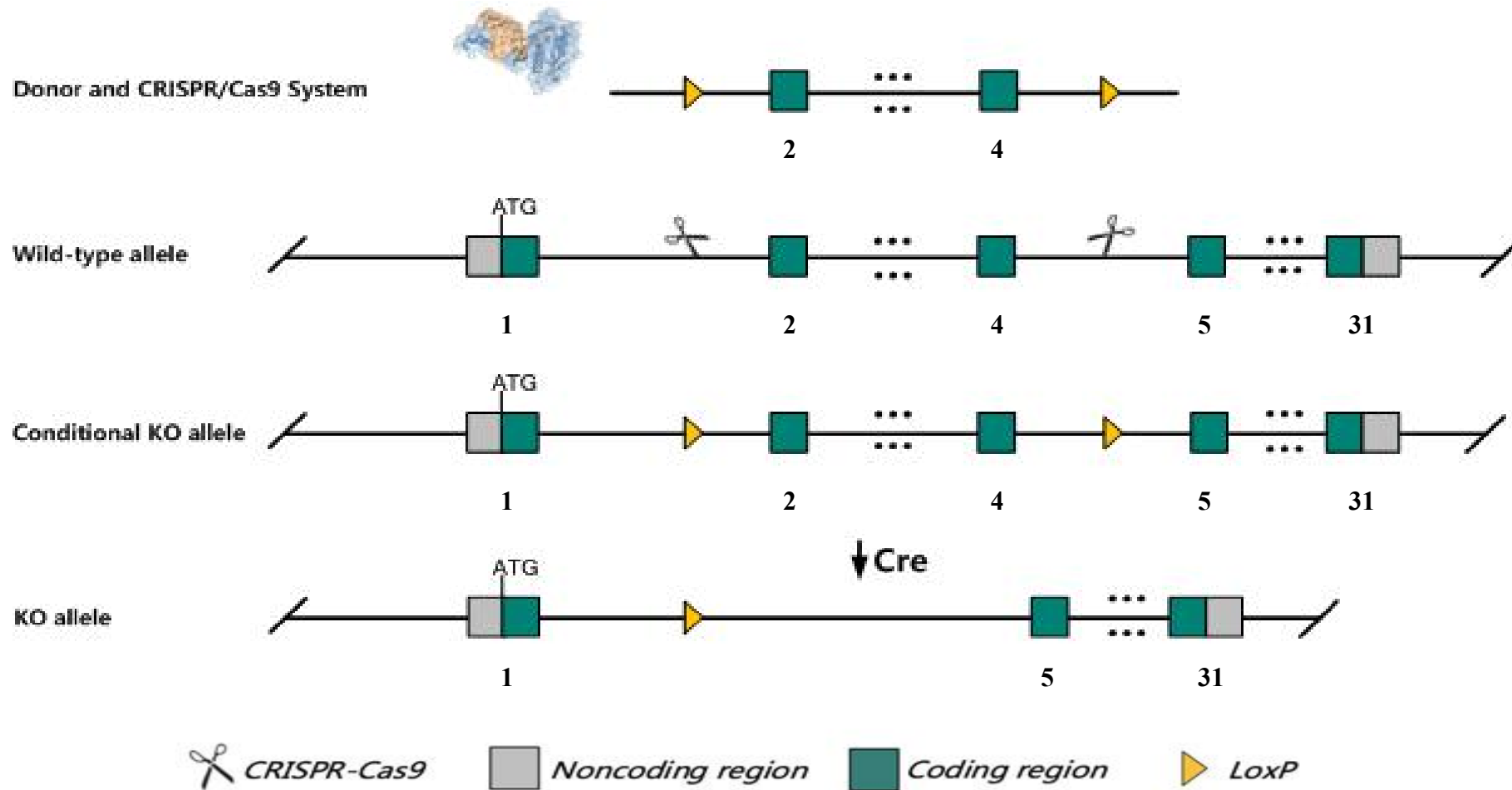
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Dgkz* gene.

Technical Information

- The *Dgkz* gene has 14 transcripts. According to the structure of *Dgkz* gene, exon2-exon4 of *Dgkz-201*(ENSMUST00000028667.10) transcript is recommended as the knockout region. The region contains 283bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Dgkz* gene. The brief process is as follows: CRISPR-Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Gene Information

Dgkz diacylglycerol kinase zeta [Mus musculus (house mouse)]

Gene ID: 104418, updated on 5-Jul-2022

Summary



Official Symbol	Dgkz provided by MGI
Official Full Name	diacylglycerol kinase zeta provided by MGI
Primary source	MGI:MGI:1278339
See related	Ensembl:ENSMUSG00000040479
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	E130307B02Rik, F730209L11Rik, mDGK[z]
Expression	Broad expression in thymus adult (RPKM 128.6), cerebellum adult (RPKM 47.0) and 24 other tissues See more
Orthologs	human all

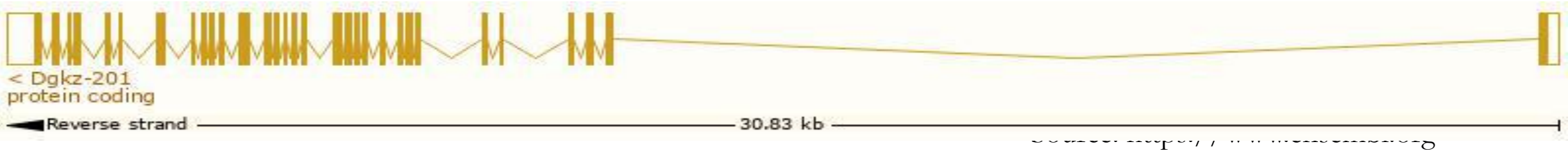
Source: [https:// www.ncbi.nlm.nih.gov/](https://www.ncbi.nlm.nih.gov/)

Transcript Information

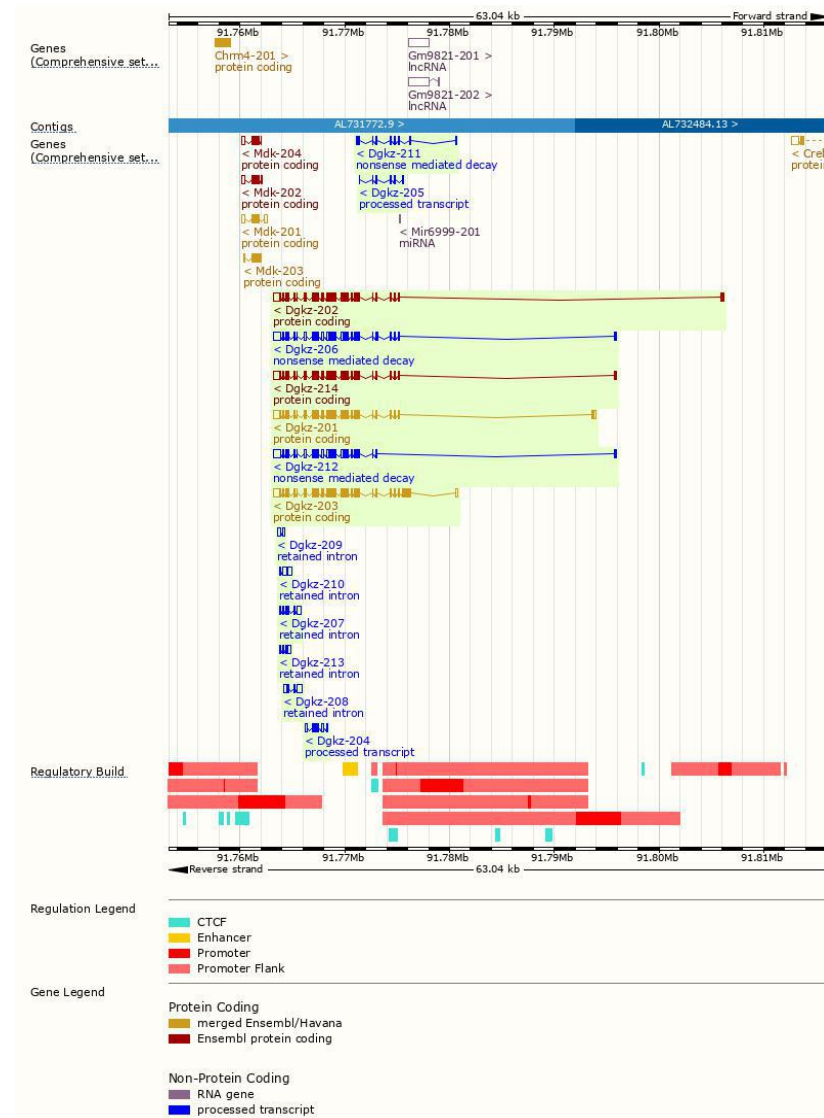
The gene has 14 transcripts, the transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dgkz-203	ENSMUST00000111303.2	4169	1123aa	Protein coding	CCDS50643		TSL:1 , GENCODE basic ,
Dgkz-201	ENSMUST00000028667.10	3584	929aa	Protein coding	CCDS16441		TSL:1 , GENCODE basic , APPRIS P2 ,
Dgkz-202	ENSMUST00000099709.10	3512	946aa	Protein coding	-		TSL:5 , GENCODE basic ,
Dgkz-214	ENSMUST00000239257.2	3393	934aa	Protein coding	-		GENCODE basic , APPRIS ALT1 ,
Dgkz-206	ENSMUST00000128152.8	3512	134aa	Nonsense mediated decay	-		TSL:5 ,
Dgkz-212	ENSMUST00000142231.8	3109	81aa	Nonsense mediated decay	-		TSL:1 ,
Dgkz-211	ENSMUST00000142090.8	788	94aa	Nonsense mediated decay	-		TSL:5 ,
Dgkz-204	ENSMUST00000124427.2	729	No protein	Processed transcript	-		TSL:3 ,
Dgkz-205	ENSMUST00000126473.2	412	No protein	Processed transcript	-		TSL:3 ,
Dgkz-208	ENSMUST00000130023.2	994	No protein	Retained intron	-		TSL:2 ,
Dgkz-210	ENSMUST00000138894.2	905	No protein	Retained intron	-		TSL:3 ,
Dgkz-207	ENSMUST00000128902.8	802	No protein	Retained intron	-		TSL:2 ,
Dgkz-213	ENSMUST00000148297.2	551	No protein	Retained intron	-		TSL:2 ,
Dgkz-209	ENSMUST00000134103.2	480	No protein	Retained intron	-		TSL:2 ,

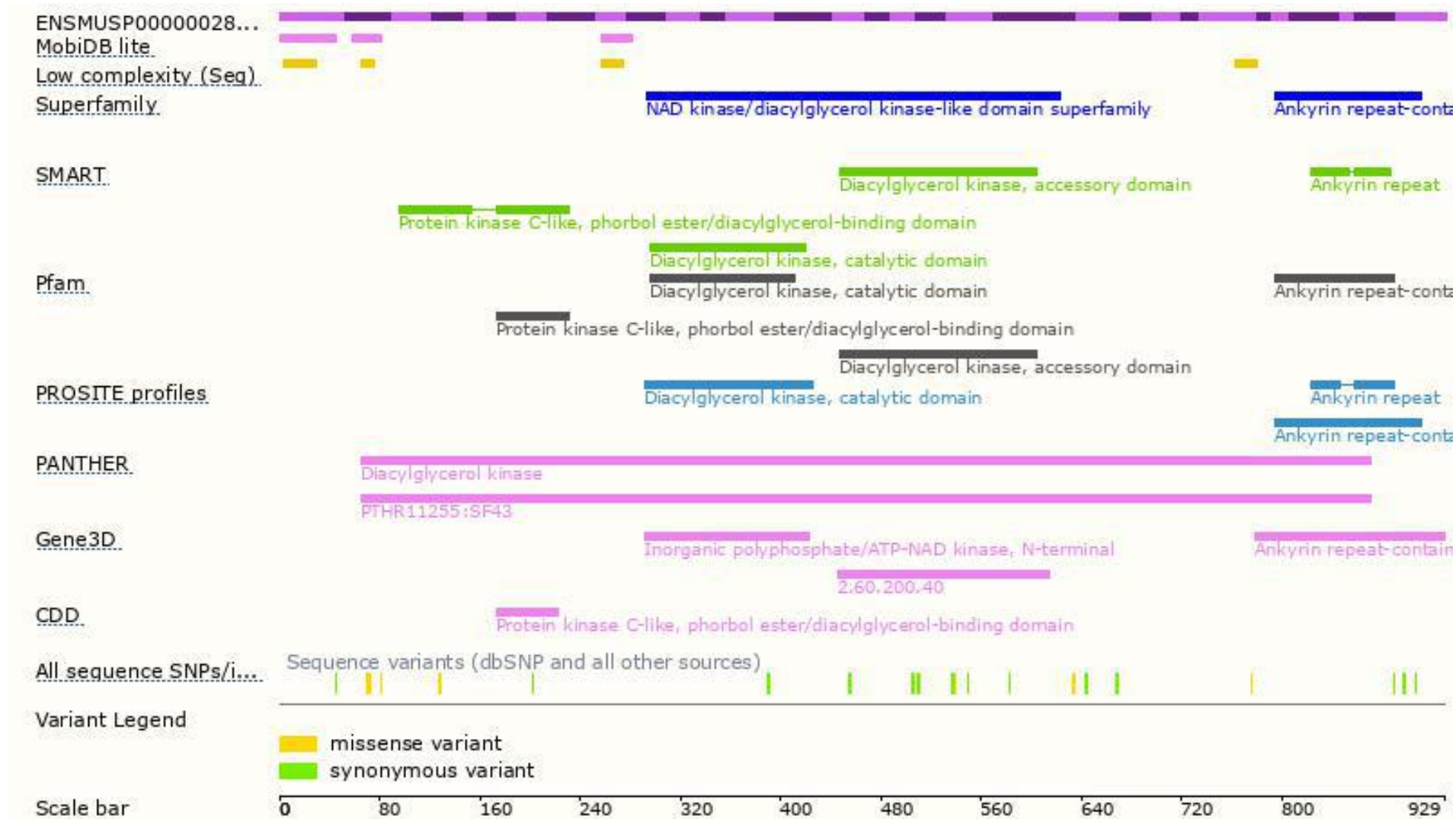
The strategy is based on the design of *Dgkz*-201 transcript, the transcription is shown below:



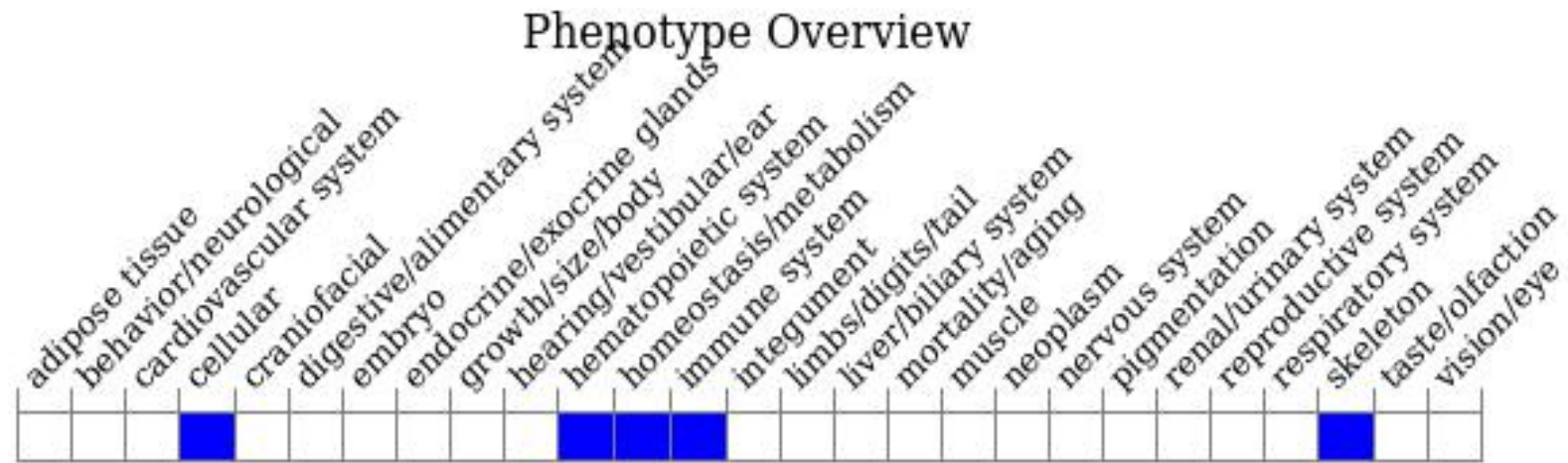
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- According to the existing MGI data, the T cell response is enhanced in homozygous mutant mice, which showed a robust response to viral infection.

Important Information

- According to the existing MGI data, the T cell response is enhanced in homozygous mutant mice, which showed a robust response to viral infection.
- *Gm9821* gene and *Mir6999* gene may be destroyed.
- The effect on transcript *Dgkz*-203 is unknown.
- *Dgkz* is located on Chr11. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.